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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,030	08/18/2003	Peter S. Aronstam	054-14996-USCP	3210
24923	7590	08/28/2009		
PAUL S MADAN MADAN & SRIRAM, PC 2603 AUGUSTA DRIVE, SUITE 700 HOUSTON, TX 77057-5662			EXAMINER PHILLIPS, FORREST M	
			ART UNIT	PAPER NUMBER
			2832	
			MAIL DATE	DELIVERY MODE
			08/28/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/643,030	<b>Applicant(s)</b> ARONSTAM ET AL.	
	<b>Examiner</b> FORREST M. PHILLIPS	<b>Art Unit</b> 2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 4,5 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6,7 and 9-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Claims 1-3, 6-7, 22-24 and 35-6 are rejected under 35 U.S.C. 102(B) as being anticipated by Cloud (US2281751).

With respect to claim 1 Cloud discloses a well bore system for producing seismic energy in an earth formation, comprising:

A cavity (13 in figure 1) configured to be disposed in a wellbore (12); and a drive source (That is the tool in its entirety including hose 24 in figure 1 comprising the piston, and prime mover 34) in fluid communication with the cavity (by means of hose 24) the drive source configured to inject fluid under pressure into the cavity to generate pressure waves in said cavity, the cavity producing seismic waves in the earth formation in response to the pressure waves, wherein fluid circulates between the cavity and the drive source in a closed loop (that is the fluid cannot escape from the closed loop of the reservoir 22, cavity 13 and prime mover of the drive source).

With respect to claim 2 Cloud further discloses wherein said drive source is configured to generate pressure waves at a selected resonance frequency of said cavity (Column 4 lines 27-69).

With respect to claim 3 Cloud further discloses wherein said drive source includes at least one of (i) a rotary valve, (ii) an electro-solenoid oscillator, and (iii) a pump (see figure 1 pump 26).

With respect to claim 6 Cloud does not disclose explicitly the use of sensors but their presence is implied by the detailed structure being for "seismic prospecting". The

Art Unit: 2832

teaching of seismic prospecting implicitly teaches sensors configured to record said produced seismic waves as prospecting requires some record.

With respect to claim 7 Cloud further discloses wherein said fluid is at least one of a liquid and a gas (described as water or other liquid column 7 line 70 – Column 8 line 8).

With respect to claims 22-24 the method steps are taught given the product structure.

With respect to claims 35 and 36 Cloud discloses a fluid reservoir (22 in figure 1) and a pump (26 in figure 1) wherein the fluid circulates from the reservoir to pump and from the pump to the cavity (13).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cloud (US2281751) in view of Stangroom (WO9750077).

With respect to claims 9 and 25 Cloud discloses the invention as claimed except wherein the fluid is a smart fluid.

Stangroom discloses the use of a smart fluid as the working fluid for an acoustic transducer.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Stangroom to use smart fluids as the working fluid of an acoustic transducer with the seismic source and method of Cloud.

The motivation for doing so would have been to reduce cost, space and weight of the system by allowing for the change of fluid parameter only requiring the electrical signal to be modulated (see Stangroom page 3 line 19- end of page 3).

3.Claims 10-13 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cloud (US2281751) in view of Stangroom (WO9750077) as applied to claim 9 above and further in view of Wassel (US62577356).

With respect to claim 10 Cloud as modified discloses the invention as claimed except comprising at least one coil provided adjacent to said cavity, said coil is configured to provide an excitation for said smart fluid in said cavity when energized.

Wassel discloses the use of a coil (99 in figure 11) provided adjacent to a cavity, said coil providing an excitation for said smart fluid in said cavity when energized (See Column 6 lines 14-45).

With respect to claim 11 Wassel further discloses wherein an effective length of a smart fluid in a cavity can be controlled by selectively energizing said coil (Column 6 lines 14-45).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Wassel to use a coil and smart fluid to control the length of a fluid cavity with the teachings of Cloud to control the length of a resonance cavity of a fluid acoustic source.

The motivation for doing so would be to reduce the number of components being physically moved to control the effective length of the resonance chamber.

With respect to claim 12 Wassel does not disclose expressly wherein the coil includes a plurality of segments which can be separately energized, it would have been obvious to one of ordinary skill in the art to provide segmented coils to allow for adjustable energizing, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art. In re Stevens, 101 USPQ 284 (CCPA1954).

With respect to claim 13 Wassel further discloses wherein the coil is configured to provide an adjustable magnitude of intensity for said excitation field (Column 6 lines 35-45).

With respect to claims 26-28 Examiner considers the method steps to be necessitated by the product structure (refer to above rejection of claims 10-13).

4. Claims 14 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cloud (US2281751) in view of Stangroom (WO9750077) and Wassel (US6257356) as applied to claim 10 above, and further in view of Dedole (US4699240).

With respect to claims 14 and 29 Cloud as modified discloses the invention as claimed except further comprising a control unit operably coupled with one of said drive source and said coil.

Dedole discloses a control unit operably coupled with one of said drive source and said coil (refer to figure 2, control unit coupled with drive source).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Dedole to include a control unit coupled with the drive source with the source of Cloud as modified to provide automated control of the frequency of the source.

5. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cloud(US2281751) in view of Stangroom (WO9750077), Wassel (US6257356) and Dedole (US4699240) as applied to claim 14 above, and further in view of Varsamis (US6366531).

With respect to claim 15 Cloud as modified discloses the invention as claimed except comprising at least one sensor connected to said control unit, said at least one sensor configured to measure a selected parameter of interest.

Varsamis discloses activating an acoustic drive source and a sensor connected to the control unit of the drive source, said sensor configured to measure a selected parameter of interest.(see figure 15, Column 9, Line 39 to Column 10, Line 60).

With respect to claim 16 Varsamis further discloses wherein said selected parameter of interest is selected from the group consisting of pressure, temperature seismic energy, flow rate, and frequency of pressure signals produced by said drive source (Column 9, Line 39 to Column 10, Line 60).

With respect to claim 17 Varsamis further discloses wherein said control unit is configured to adjust said drive source in response to a measurement provided by said at least one sensor.(see figure 15, Column 9, Line 39 to Column 10, Line 60).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Varsamis to have a sensor measure and the control module control the acoustic source according to the response of the sensor in order to maximize sampling efficiency.

6. Claims 18 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cloud (US2281751) in view of Dedole (US4699240).

With respect to claims 18 and 32 Cloud as modified discloses the invention as claimed except further comprising a control unit operably coupled with one of said drive source and said coil.

Dedole discloses a control unit operably coupled with one of said drive source and said coil (refer to figure 2, control unit coupled with drive source).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Dedole to include a control unit coupled with the drive source with the source of Cloud as modified to provide automated control of the frequency of the source.

7. Claims 19-21 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cloud (US2281751) in view of Dedole (US4699240) as applied to claim 18 above, and further in view of Varsamis (US6366531).

With respect to claim 19 Winbow as modified discloses the invention as claimed except comprising at least one sensor connected to said control unit, said at least one sensor configured to measure a selected parameter of interest.



Varsamis discloses activating an acoustic drive source and a sensor connected to the control unit of the drive source, said sensor configured to measure a selected parameter of interest.(see figure 15, Column 9, Line 39 to Column 10, Line 60).

With respect to claim 20 Varsamis further discloses wherein said selected parameter of interest is selected from the group consisting of pressure, temperature seismic energy, flow rate, and frequency of pressure signals produced by said drive source (Column 9, Line 39 to Column 10, Line 60).

With respect to claim 21 Varsamis further discloses wherein said control unit is configured to adjust said drive source in response to a measurement provided by said at least one sensor.(see figure 15, Column 9, Line 39 to Column 10, Line 60).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Varsamis to have a sensor measure and the control module control the acoustic source according to the response of the sensor in order to maximize sampling efficiency.

With respect to claim 30 and 31 examiner considers the method steps to be necessitated by the product structure.

### ***Response to Arguments***

Applicant's arguments filed 5/19/09 have been fully considered but they are not persuasive. Regarding the circulation in a closed loop of the fluid, Cloud discloses a system and its source wherein the fluid does not escape form the source, the entire tool being the source, thus constituting a closed loop as required by the claim language.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FORREST M. PHILLIPS whose telephone number is (571)272-9020. The examiner can normally be reached on Monday through Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on 57127221990. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2832

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/F. M. P./  
Examiner, Art Unit 2832

/Jeffrey Donels/  
Primary Examiner, Art Unit 2832